SUPPLEMENTARY INFORMATION

COMPARISON OF OSCILLOMETRY DEVICES USING ACTIVE MECHANICAL TEST LOADS

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Figure S1a. Resistance and reactance spectra measured with the different oscillometry devices (see inset) in mechanical test loads M1 without (left) and with 700 ml tidal volume simulated breathing (right).

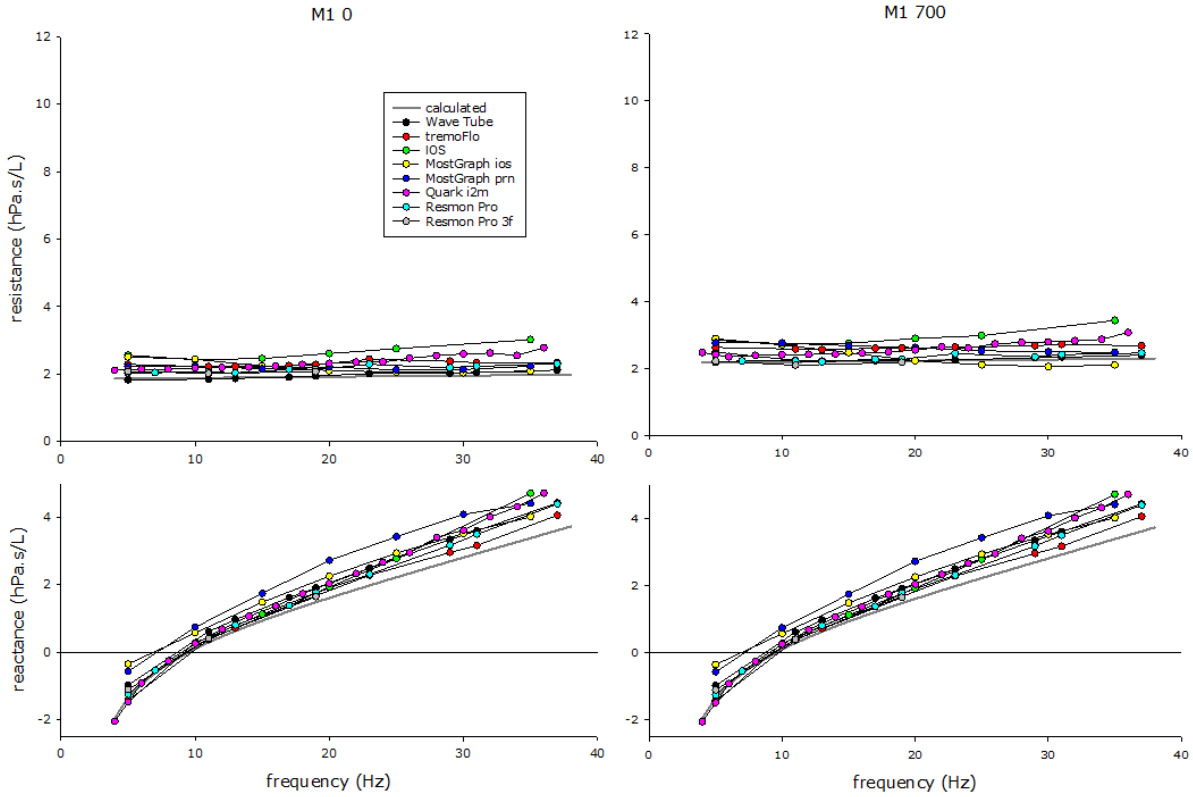


Figure S1b. Resistance and reactance spectra measured with the different oscillometry devices (see inset in Fig. S1a) in mechanical test loads M2 without (left) and with 700 ml tidal volume simulated breathing (right).

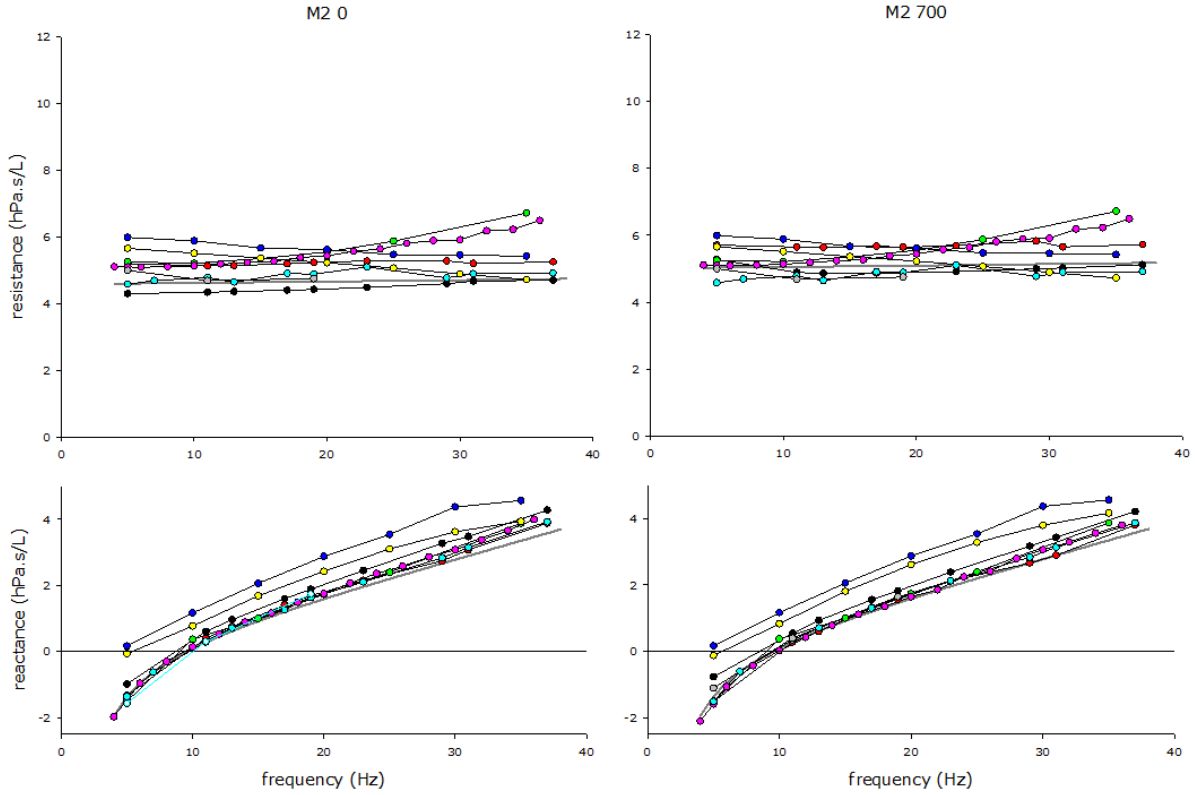


Figure S1c. Resistance and reactance spectra measured with the different oscillometry devices (see inset in Fig. S1a) in mechanical test loads M3 without (left) and with 700 ml tidal volume simulated breathing (right).

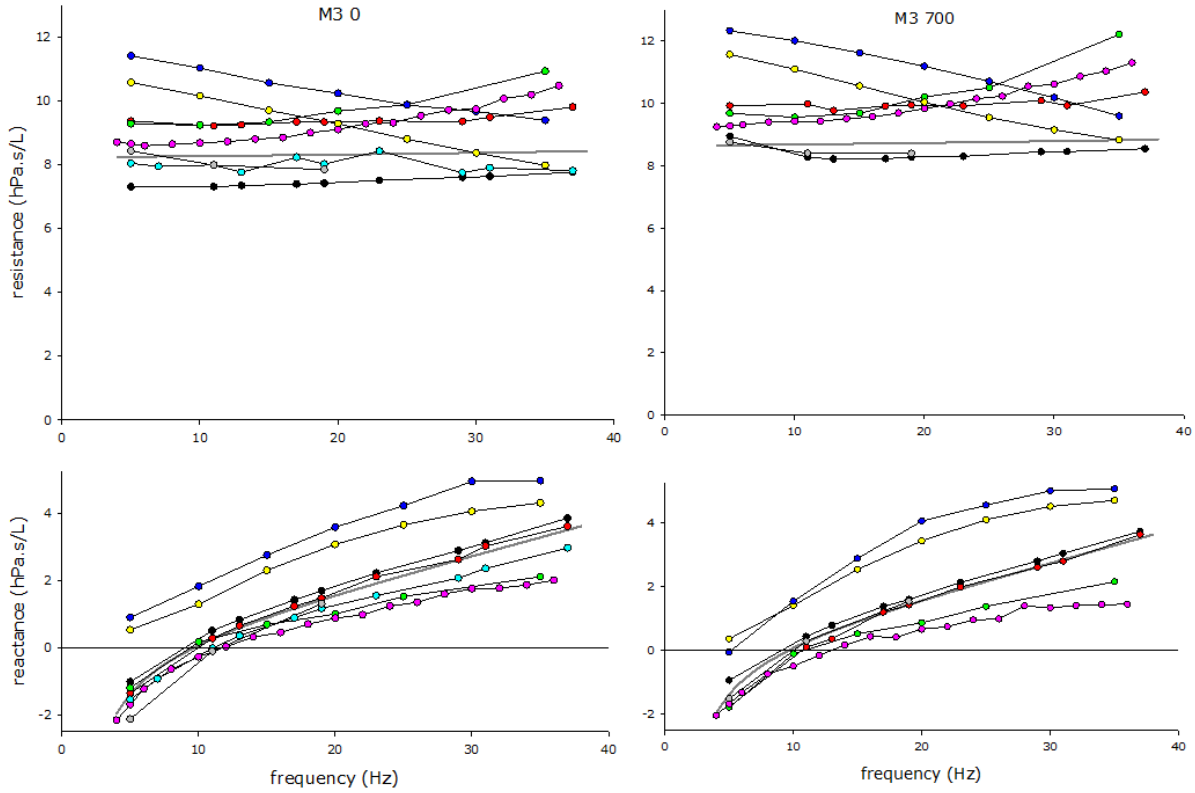


Figure S1d. Resistance and reactance spectra measured with the different oscillometry devices (see inset in Fig. S1a) in mechanical test loads M4 without (left) and with 300 ml tidal volume simulated breathing (right).

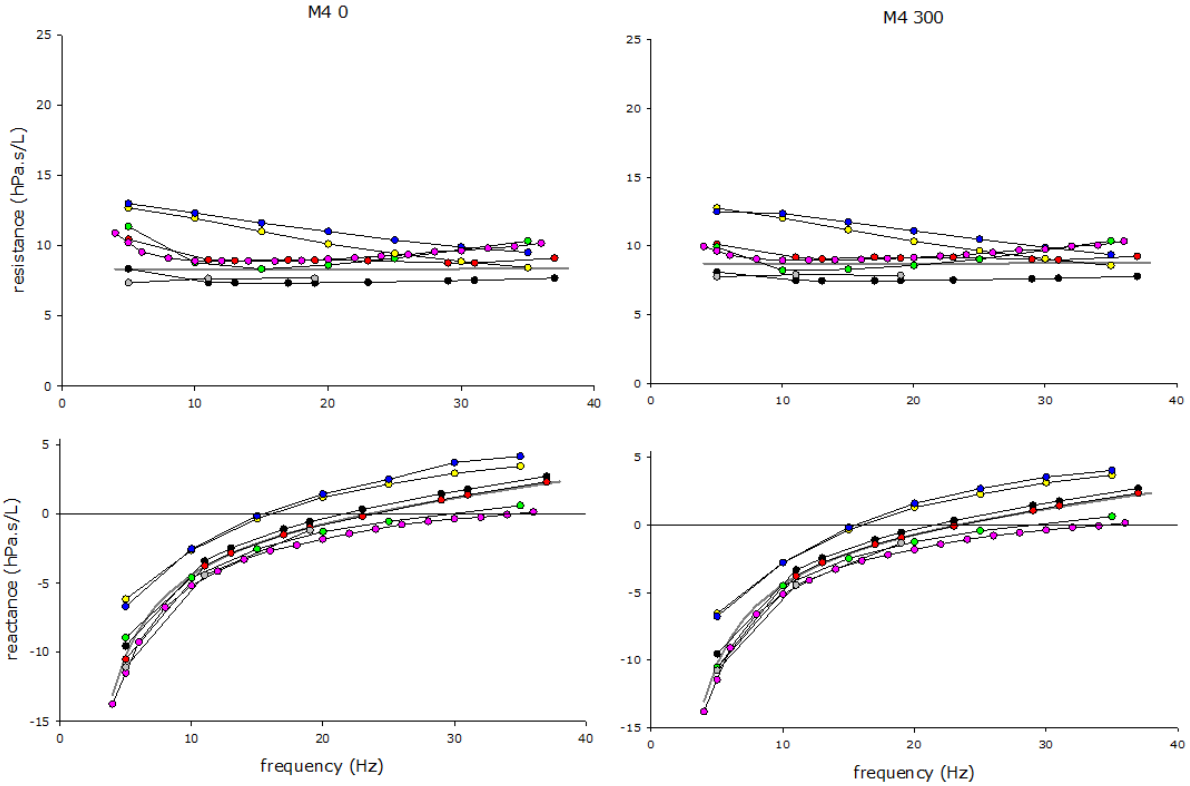


Figure S1e. Resistance and reactance spectra measured with the different oscillometry devices (see inset in Fig. S1a) in mechanical test loads M5 without (left) and with 300 ml tidal volume simulated breathing (right).

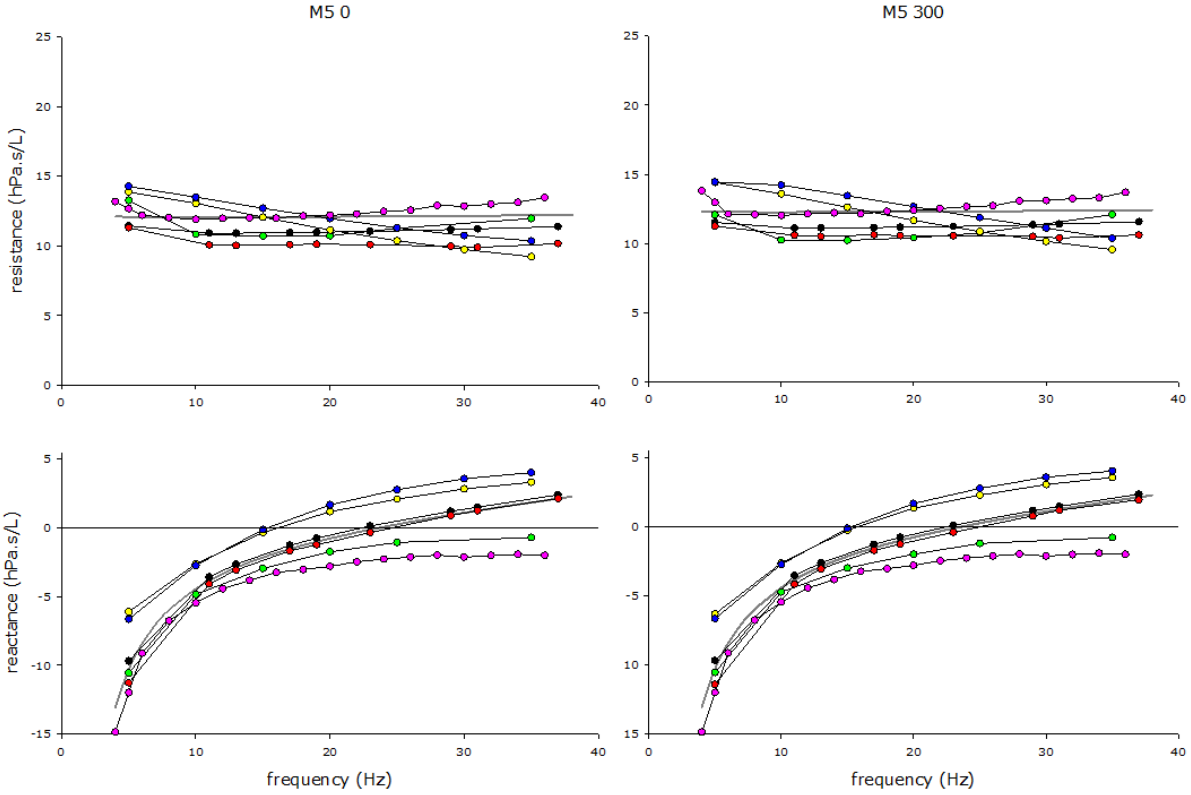
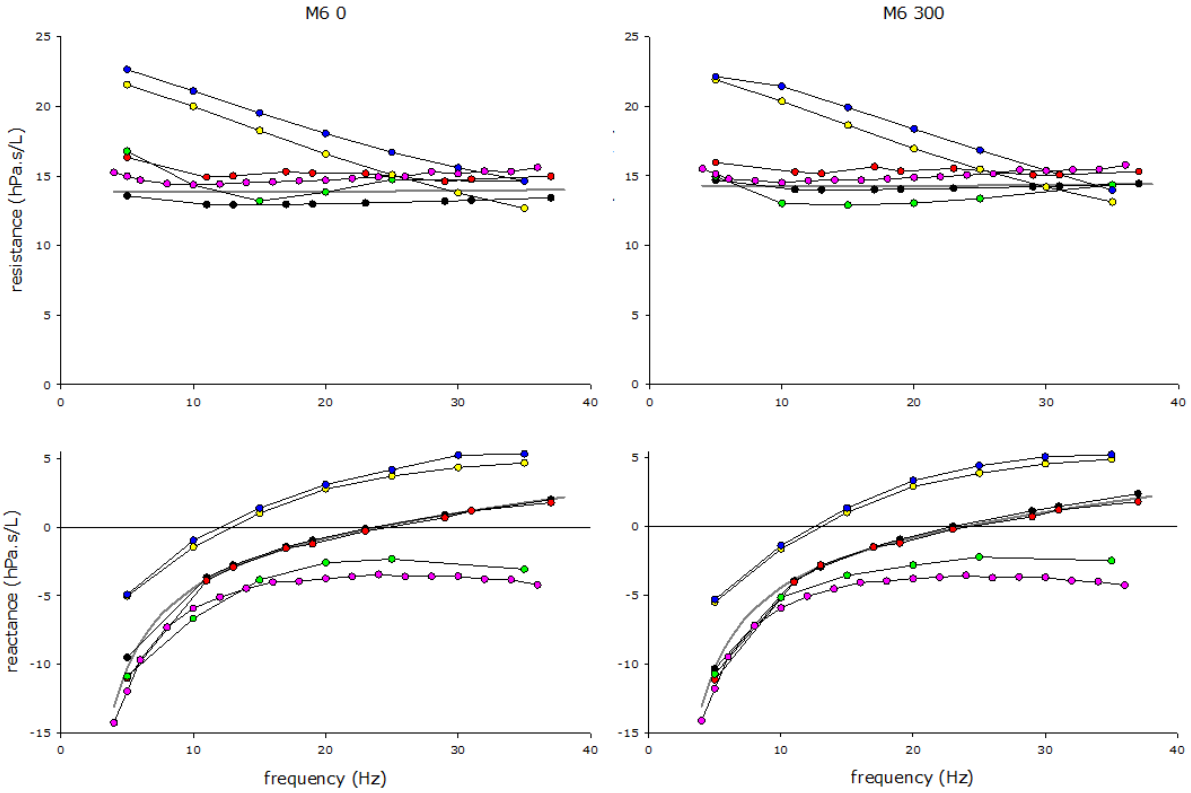


Figure S1f. Resistance and reactance spectra measured with the different oscillometry devices (see inset in Fig. S1a) in mechanical test loads M6 without (left) and with 300 ml tidal volume simulated breathing (right).



Appendix S1- Effects of simulated breathing on impedance parameters.

Parameters obtained from resistance (R) – compliance (C) - inertance (L) model fitting to measured impedance data, resonance frequency (f_{res}), reactance area (A_X) and frequency dependence of resistance between 5 Hz and 20 (or 19) Hz ($R_{5\text{-}20(19)}$) were analysed with two-way repeated measures analysis of variance (two-way RM ANOVA, SigmaPlot v13, Systat Software Inc., San Jose, CA, USA). Normality and equal variance of data were checked with the Shapiro-Wilk test and the Brown-Forsythe test, respectively. A *P*-value of <0.05 was considered as significant.

For all mechanical test loads, only the Wave Tube, tremoFlo C-100, MasterScreen IOS, MostGraph-02 and Quark i2m data were available. Table ~~S2~~ S1 lists the results of the 2w RM ANOVA, showing statistically significant effect of breathing, in addition to the test load and device dependences, on R and with the breathing-test load interaction on $R_{5\text{-}20(19)}$.

The statistical test was repeated to include the test models M1 through M4 where the Resmon Pro 3f mode data were also available (Table ~~S3~~S2). R remained the only parameter affected by the simulated breathing.

Table S1- Results of the two-way repeated measures analysis of variance for all mechanical test loads

	P					
Source of Variation	R	L	C	f_{res}	A_x	$R_{5\text{-}20(19)}$
device	0.002	<0.001	0.458	<0.001	0.008	<0.001
breathing	0.014	0.444	0.395	0.022	0.598	0.209
mechanical test load	<0.001	0.259	0.431	<0.001	<0.001	<0.001
breathing × test load	<0.001	0.805	0.556	0.017	0.226	<0.001

Table S2- Results of the two-way repeated measures analysis of variance for all devices and mechanical test loads M1-M4

	P					
Source of Variation	R	L	C	fres	Ax	$R_{5\text{-}20(19)}$
breathing	<0.001	0.856	0.390	0.072	0.297	0.564
mechanical test load	<0.001	0.126	0.433	<0.001	<0.001	<0.001
breathing × test load	<0.001	0.724	0.508	0.167	0.204	0.001